

18. Elucidate electron transport chain and oxidative phosphorylation.
19. Describe the light reaction of photosynthesis with special reference to non-cyclic and cyclic photophosphorylation
20. Discuss the various modes of asexual reproduction in fungi.

APRIL/MAY 2025

**23UMB21 — MICROBIAL PHYSIOLOGY
AND METABOLISM**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is the use of turbidimetry in growth analysis?
2. Categorize the Physical methods of controlling microorganisms.
3. Give an example for each of the following chemolithotrophs:
 - (a) Iron-oxidizing bacteria
 - (b) Sulphur oxidizing bacteria
 - (c) Nitrate reducing bacteria.
4. What are the four types of passive diffusion?
5. Which organism perform homolactic fermentation?



6. Mention the key enzymes in EMP pathway.
7. How many ATPs are produced in the dark reaction?
8. Define photolysis to water.
9. Point out any two differences between budding and binary fission.
10. What is sporangiospores

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Discuss the various phases in bacterial growth curve.

Or

- (b) Elucidate the role of chemical agents in controlling microbial growth.

12. (a) Differentiate between chemotrophs and phototrophs.

Or

- (b) List the various environmental factors which influence growth of microorganism.



13. (a) Give the schematic representation of Citric acid cycle.

Or

- (b) What do you understand from the process fermentation? Discuss any two types of fermentation.

14. (a) Draw a neat sketch of chloroplast and state its importance in photosynthesis.

Or

- (b) Summarize the steps involved in Calvin cycle.

15. (a) List the steps involved in binary fission

Or

- (b) Add a note on microalgae reproduction.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write an outline on batch and continuous culture with suitable diagram.
17. Explain the mechanism of nutrient uptake in microorganisms.